FlyBy Math™ Alignment
Wisconsin Model Academic Standards
Mathematics Content Standards and Performance Standards

Content Standard A. Mathematical Processes

Students in Wisconsin will draw on a broad body of mathematical knowledge and apply a variety of mathematical skills and strategies, including reasoning, oral and written communication, and the use of appropriate technology, when solving mathematical, real-world and non-routine problems.

Performance Standards	FlyBy Math™ Activities
A.8.1 Use reasoning abilities to: • evaluate information • perceive patterns • identify relationships • formulate questions for further exploration • evaluate strategies • justify statements • test reasonableness of results • defend work	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
A.8.2 Communicate logical arguments clearly to show why a result makes sense	--Predict outcomes and explain results of mathematical models and experiments.
A.8.5 Explain mathematical concepts, procedures, and ideas to others who may not be familiar with them	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.

Content Standard B - Number Operations And Relationships

Students in Wisconsin will use numbers effectively for various purposes, such as counting, measuring, estimating, and problem solving.

Performance Standards	FlyBy Math™ Activities
B.8.5 Apply proportional thinking in a variety of problem situations that include, but are not limited to • ratios and proportions (e.g., rates, scale drawings*, similarity*) • percents, including those greater than 100 and less than one (e.g., discounts, rate of increase or decrease, sales tax)	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.

Contend Standard C: Geometry

Students in Wisconsin will be able to use geometric concepts, relationships and procedures to interpret, represent, and solve problems.

Performance Standards	*FlyBy Math*TM Activities
C.8.5 Locate objects using the rectangular coordinate system	--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

Content Standard D: Measurement

Students in Wisconsin will select and use appropriate tools (including technology) and techniques to measure things to a specified degree of accuracy. They will use measurements in problem-solving situations.

Performance Standards	*FlyBy Math*TM Activities
D.8.3 Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy • elapsed time to the nearest second	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
D.8.4 Determine measurements indirectly* using • estimation • ratio and proportion (e.g., similarity*, scale drawings*)	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Compare airspace scenarios for both the same and different starting conditions and the same and different rates.

Content Standard E: Statistics and Probability

Students in Wisconsin will use data collection and analysis, statistics and probability in problem-solving situations, employing technology where appropriate.

Performance Standards	*FlyBy Math*TM Activities
E.8.1 Work with data in the context of real-world situations by: • formulating questions that lead to data collection and analysis	--Conduct simulation and measurement for several aircraft conflict problems.
E.8.2 Organize and display data from statistical investigations using: • appropriate tables, graphs, and/or charts (e.g., circle, bar or line for multiple sets of data) • appropriate plots (e.g., line*, stem-and-leaf*, box*, scatter*)	--Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.

E.8.4 Use the results of data analysis to: • make predictions • develop convincing arguments • draw conclusions	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.

Content Standard F: Algebraic Relationships

Students in Wisconsin will discover, describe, and generalize simple and complex patterns and relationships. In the context of real-world problem situations, the student will use algebraic techniques to define and describe the problem to determine and justify appropriate solutions.

Performance Standards	*FlyBy Math^{TM}* Activities
F.8.2 Work with linear and nonlinear patterns* and relationships in a variety of ways, including • representing them with tables, with graphs, and with algebraic expressions, equations, and inequalities • describing and interpreting their graphical representations (e.g., slope*, rate of change, intercepts*) • using them as models of real-world phenomena • describing a real-world phenomenon that a given graph might represent	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system. --Interpret the slope of a line in the context of a distance-rate-time problem. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.
F.8.3 Recognize, describe, and analyze functional relationships* by generalizing a rule that characterizes the pattern of change among variables. These functional relationships include exponential growth and decay (e.g., cell division, depreciation)	--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates. --Interpret the slope of a line in the context of a distance-rate-time problem.
F.8.4 Use linear equations and inequalities in a variety of ways, including • writing them to represent problem situations and to express generalizations • solving them by different methods (e.g., informally, graphically, with formal properties, with technology) • writing and evaluating formulas (including solving for a specified variable) • using them to record and describe solution strategies	--Use the distance-rate-time formula to predict and analyze aircraft conflicts.